1. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(8 + 2i)(-9 + 7i)$$

A. $a \in [-59, -55]$ and $b \in [-78, -72]$

B. $a \in [-73, -63]$ and $b \in [11, 16]$

C. $a \in [-87, -85]$ and $b \in [-44, -36]$

D. $a \in [-59, -55]$ and $b \in [74, 77]$

E. $a \in [-87, -85]$ and $b \in [34, 41]$

---

2. Simplify the expression below and choose the interval the simplification is contained within.

$$3 - 2^2 + 1 \div 10 * 18 \div 11$$

A. $[-1.12, -0.9]$

B. $[7.09, 7.26]$

C. $[6.71, 7.11]$

D. $[-0.85, -0.3]$

E. None of the above

---

3. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{1188}{9}} + \sqrt{45}i$$

A. Rational

B. Nonreal Complex

C. Pure Imaginary

D. Not a Complex Number

E. Irrational

4. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{625}{0}} + \sqrt{45}i$$

A. Irrational

B. Pure Imaginary

C. Rational

D. Not a Complex Number

E. Nonreal Complex

5. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{-9 - 33i}{-7 + 5i}$$

A. $a \in [-103.5, -101]$ and $b \in [3, 4.5]$

B. $a \in [-3, -1]$ and $b \in [3, 4.5]$

C. $a \in [-3, -1]$ and $b \in [275.5, 276.5]$

D. $a \in [1.5, 4]$ and $b \in [2, 3]$

E. $a \in [0.5, 1.5]$ and $b \in [-8, -6.5]$

6. Simplify the expression below and choose the interval the simplification is contained within.

$$6 - 3^2 + 19 \div 5 * 10 \div 2$$

A. $[33.31, 34.53]$

B. $[15.92, 16.33]$

C. $[14.78, 15.26]$

D. $[-2.93, -1.92]$

E. None of the above

---

7. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(-7 - 8i)(3 + 10i)$$

A. $a \in [56, 63]$ and $b \in [93, 97]$

B. $a \in [56, 63]$ and $b \in [-96, -92]$

C. $a \in [-103, -100]$ and $b \in [-46, -40]$

D. $a \in [-24, -16]$ and $b \in [-85, -73]$

E. $a \in [-103, -100]$ and $b \in [46, 47]$

---

8. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{-72 - 66i}{3 + 4i}$$

A. $a \in [-25, -23.5]$ and $b \in [-17.5, -15.5]$

B. $a \in [-20.5, -19]$ and $b \in [89.5, 91]$

C. $a \in [-20.5, -19]$ and $b \in [3, 5]$

D. $a \in [1.5, 2]$ and $b \in [-20, -19]$

E. $a \in [-481, -479]$ and $b \in [3, 5]$

---

9. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{23}{0}}$$

A. Not a Real number

B. Whole

C. Rational

D. Irrational

E. Integer

---

10. Choose the **smallest** set of Real numbers that the number below belongs to.

$$-\sqrt{\frac{256}{625}}$$

A. Integer

B. Rational

C. Not a Real number

D. Whole

E. Irrational

---

11. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(10 - 4i)(-6 - 8i)$$

A. $a \in [-38, -25]$ and $b \in [-104, -102]$

B. $a \in [-38, -25]$ and $b \in [104, 108]$

C. $a \in [-92, -87]$ and $b \in [52, 57]$

D. $a \in [-92, -87]$ and $b \in [-56, -54]$

E. $a \in [-63, -58]$ and $b \in [28, 35]$

---

12. Simplify the expression below and choose the interval the simplification is contained within.

$$12 - 8 \div 13 * 16 - (15 * 14)$$

A. $[-202.04, -193.04]$

B. $[-182.85, -176.85]$

C. $[-213.85, -203.85]$

D. $[219.96, 223.96]$

E. None of the above

---

13. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\sqrt{\frac{-567}{9}}i + \sqrt{55}i$$

A. Not a Complex Number

B. Pure Imaginary

C. Nonreal Complex

D. Rational

E. Irrational

---

14. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\frac{\sqrt{119}}{20} + \sqrt{-6}i$$

A. Pure Imaginary

B. Nonreal Complex

C. Irrational

D. Not a Complex Number

E. Rational

---

15. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{45 - 22i}{7 - 4i}$$

A. $a \in [6.04, 6.3]$ and $b \in [-0.5, 1]$

B. $a \in [6.04, 6.3]$ and $b \in [25.5, 28]$

C. $a \in [402.98, 403.23]$ and $b \in [-0.5, 1]$

D. $a \in [3.36, 3.52]$ and $b \in [-6, -4.5]$

E. $a \in [6.28, 6.6]$ and $b \in [5, 6]$

---

16. Simplify the expression below and choose the interval the simplification is contained within.

$$9 - 4^2 + 16 \div 18 * 7 \div 17$$

A. $[25.34, 26.01]$

B. $[-7.31, -6.88]$

C. $[24.16, 25.14]$

D. $[-6.66, -6.5]$

E. None of the above

---

17. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(6 - 3i)(7 - 10i)$$

A. $a \in [36, 44]$ and $b \in [28, 35]$

B. $a \in [9, 14]$ and $b \in [80, 82]$

C. $a \in [66, 75]$ and $b \in [-40, -38]$

D. $a \in [66, 75]$ and $b \in [38, 47]$

E. $a \in [9, 14]$ and $b \in [-81, -77]$

---

18. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{-63 + 33i}{-6 + 2i}$$

A. $a \in [7.5, 8.5]$ and $b \in [-9, -7]$

B. $a \in [10, 11]$ and $b \in [15.5, 17]$

C. $a \in [11, 12]$ and $b \in [-2.5, -0.5]$

D. $a \in [443, 445]$ and $b \in [-2.5, -0.5]$

E. $a \in [11, 12]$ and $b \in [-73.5, -71.5]$

---

19. Choose the **smallest** set of Real numbers that the number below belongs to.

$$-\sqrt{\frac{102400}{256}}$$

A. Rational

B. Integer

C. Irrational

D. Whole

E. Not a Real number

---

20. Choose the **smallest** set of Real numbers that the number below belongs to.

$$-\sqrt{\frac{14}{0}}$$

A. Rational

B. Irrational

C. Not a Real number

D. Whole

E. Integer

---

21. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(-6 + 4i)(9 - 3i)$$

A. $a \in [-42, -38]$ and $b \in [-56, -50]$

B. $a \in [-68, -58]$ and $b \in [16, 19]$

C. $a \in [-42, -38]$ and $b \in [52, 59]$

D. $a \in [-68, -58]$ and $b \in [-18, -16]$

E. $a \in [-55, -49]$ and $b \in [-16, -6]$

---

22. Simplify the expression below and choose the interval the simplification is contained within.

$$20 - 17^2 + 7 \div 18 * 19 \div 8$$

A. $[-269.87, -268.41]$

B. $[309.82, 310.51]$

C. $[308.54, 309.06]$

D. $[-268.96, -267.02]$

E. None of the above

---

23. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\frac{12}{14} + \sqrt{-9}i$$

A. Irrational

B. Not a Complex Number

C. Nonreal Complex

D. Rational

E. Pure Imaginary

---

24. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$-\sqrt{\frac{225}{121}} + 16i^2$$

A. Nonreal Complex

B. Pure Imaginary

C. Irrational

D. Rational

E. Not a Complex Number

---

25. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{63 - 22i}{-1 + 3i}$$

A. $a \in [-13, -12.5]$ and $b \in [-17.5, -16]$

B. $a \in [-64.5, -62.5]$ and $b \in [-9, -5.5]$

C. $a \in [-13, -12.5]$ and $b \in [-169, -166]$

D. $a \in [-130, -128]$ and $b \in [-17.5, -16]$

E. $a \in [-0.5, 1.5]$ and $b \in [20, 22.5]$

---

26. Simplify the expression below and choose the interval the simplification is contained within.

$$20 - 19 \div 14 * 6 - (16 * 17)$$

A. $[-70.43, -63.43]$

B. $[-255.23, -247.23]$

C. $[291.77, 293.77]$

D. $[-262.14, -258.14]$

E. None of the above

---

27. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$(9 - 6i)(2 - 8i)$$

A. $a \in [-34, -28]$ and $b \in [81, 88]$

B. $a \in [-34, -28]$ and $b \in [-86, -81]$

C. $a \in [66, 68]$ and $b \in [60, 67]$

D. $a \in [66, 68]$ and $b \in [-64, -55]$

E. $a \in [17, 23]$ and $b \in [48, 55]$

---

28. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{45 - 66i}{7 - i}$$

A. $a \in [4, 6]$ and $b \in [-10.5, -9.5]$

B. $a \in [5.5, 7]$ and $b \in [65, 66.5]$

C. $a \in [6.5, 8]$ and $b \in [-9, -6.5]$

D. $a \in [380, 382]$ and $b \in [-9, -6.5]$

E. $a \in [6.5, 8]$ and $b \in [-417.5, -416]$

---

29. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{-715}{5}}$$

A. Integer

B. Irrational

C. Rational

D. Not a Real number

E. Whole

---

30. Choose the **smallest** set of Real numbers that the number below belongs to.

$$\sqrt{\frac{38025}{169}}$$

A. Integer

B. Not a Real number

C. Rational

D. Irrational

E. Whole
